

Remarks102 Rejections

Lew has been cited for the describing a combination of NMR measurements with dielectric and/or bulk density measurements. In support of this position, the Office Actions focuses on the appearance of the word "dielectric" in the text of Lew. For example, the Office Action cites a sentence from Lew that "[w]ater is electrically conductive, while oil is a dielectric medium" to relate Lew's disclosure to the present invention. However, Lew does not in any way teach or suggest the making or using of dielectric measurements. Even more specifically, Lew nowhere teaches a combining of the density, dielectric constant, and NMR to compute more accurate fluid volumes. Indeed Leu et al. do not teach anything about measuring or using dielectric constant data.

Lew's discussion of 'dielectric' matters relates only relative dielectric constant values of water and oil, water having a much higher dielectric property compared to oil. Nowhere does Lew disclose a specific dielectric measurement, much less a method or apparatus to make such measurements. Applicant describes typical dielectric measurements at least beginning at paragraph 7, e.g. taken by a microwave or high-frequency dielectric tool. Instead Lew relates only to the making of NMR measurements.

Lew's mention of rf emissions relates only to the NMR measurements. At col. 4, lines 44-59, Lew describes the measurement of the NMR measurement of a free induction decay (FID) by comparing amplitudes of rf emissions generated between pulses of an NMR acquisition sequence. (cite to OA that this rf emission and FID are not dielectric quantities) In fact, Lew defines its measurement of rf emissions as an NMR quantity. (See col. 2:44-67 and col. 15:67 – col. 16:2) There is simply no disclosure of any measurements other than NMR measurements. Thus, there is no support for a combination of NMR measurements with any other type of measurement.

With respect to claim 30, the Office Action cites a section of Lew mentioning 'bulk density' at col. 2:28-39. However, this section only discusses the short-comings of previous approaches to determine cut-ratios. Specifically, this section states that a small change in oil density results in a large error. However, this section nowhere suggests that a combination of NMR measurements with bulk density measurement is desirable or useful. Further, there is nothing in the remainder of the Lew patent that explicitly or implicitly discloses such a combination. Instead, as described above, Lew relates exclusively to the use of NMR measurements alone. (See Abstract) There is simply no discussion in Lew of making or using measurements other than that obtained with an NMR acquisition.

CONCLUSION

The Applicants believe this paper is fully responsive to each and every ground of rejection and objection cited by the Examiner, and respectfully request that the application proceed to grant.

Please charge any applicable fees, or apply any excess, to deposit account number 19-0610.

Respectfully submitted,

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